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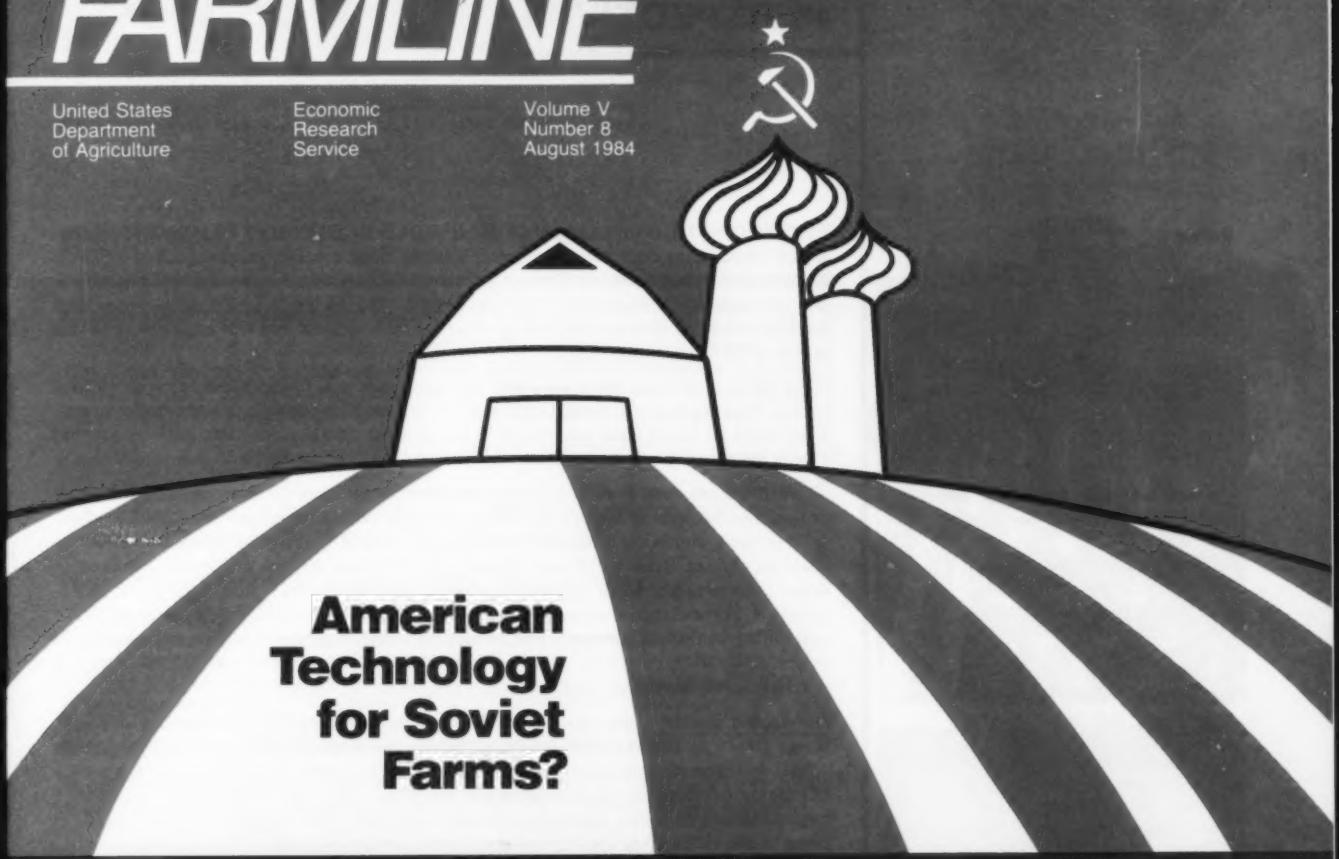

American Technology for Soviet Farms?

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PERSPECTIVES

LESS FOOD AID, OVERALL, MAY BE NEEDED IN THE NEXT 12 MONTHS by the world's developing countries to maintain current diets, according to analysts of USDA's Economic Research Service. Their forecasts project a decline in food aid needs of 640,000 tons (grain equivalent) from the record 1983/84 level of 12.4 million tons, and possibly a further drop in 1985/86 of around 2 million tons. But this apparent optimism masks several disturbing trends.

"The Third World is facing a sustained financial crisis, and food aid needs are likely to remain high for years to come," says economist Ray Nightingale, who directed a recent ERS study on world food conditions. "The financial situation for these nations is so bad that it has severely constrained their economies."

The prospective drop in food aid needs for developing countries flows largely from their reductions of nonfood imports, as well as debt-payment adjustments permitted by the International Monetary Fund and other lenders—rather than from a strong upturn in their economies. Relieved of some pressure for payment through credit extensions or other arrangements, some nations are able to use that "extra" money for food purchases. The even larger decline in food aid needs forecast for 1985/86 is expected to come from economic growth in the developing world, triggered by increased sales of raw materials to Western industrialized nations. With more export earnings, food-deficit nations can afford to buy more food.

Developing countries are also expected to continue cutting back on imports of consumer goods, as well as capital goods critical for industrial and agricultural development. Nightingale sees potentially serious damage in the long term should this pattern persist. "Delaying development in this fashion could keep these countries from progressing beyond their role as raw material suppliers to the West, and cripple their attempts to bring in the technology vital to increased agricultural productivity."

Agricultural shortfalls, in fact, are the major reason food aid is needed in the Third World, Nightingale says. Along with traditional problems of population growth and unpredictable weather, there is a widespread inability to finance agricultural development. "The failure to address the immediate problem will create more problems down the road"—such as growing food aid needs should Third World agriculture remain at subsistence levels. The experience of the 1980's reverses what had been a generally positive situation in the 1970's. Many developing nations invested in their own agricultural research facilities, stressing both original research and the application of external technology to their own conditions. Per capita production improved and hunger was reduced in most areas, except Africa.

Several countries in Sub-Saharan Africa are now in stark need. At least one, Mozambique, has tripped over the thin line separating hunger and starvation. Mozambique will need between 300,000 and 500,000 tons of food aid, as will other nations on the continent—Ethiopia, Madagascar, Somalia, and Tanzania. These are only the amounts needed to maintain consumption at current levels. Were diets to be raised to nutritionally acceptable levels, Mozambique would need more than 1 million tons.

On the positive side, Ethiopia and Somalia have received some relief from the debilitating drought which withered crops and caused profound upheaval for millions. Recent rains there have raised hopes that prospects for these troubled countries may improve.

A further element of risk for developing countries is found in rising interest rates. The danger here derives from the spiraling effect that occurs when countries borrow more and more money to pay the larger interest on existing debt. Debt, delayed development, agricultural failure, and ever-rising interest rates—they all add up to a "higher degree of uncertainty in the world," Nightingale says. "And when things are uncertain, you need a bigger insurance policy." That policy could be based on a greater commitment to food aid by developed nations as well as an emergency world food reserve, he contends.

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Practical economic intelligence from USDA's Economic Research Service

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U.S. trade in farm machinery flows both ways, but the traffic slowed in the last few years, particularly on the export side. As a result, the traditional U.S. advantage in farm machinery trade declined to its lowest level since 1979.

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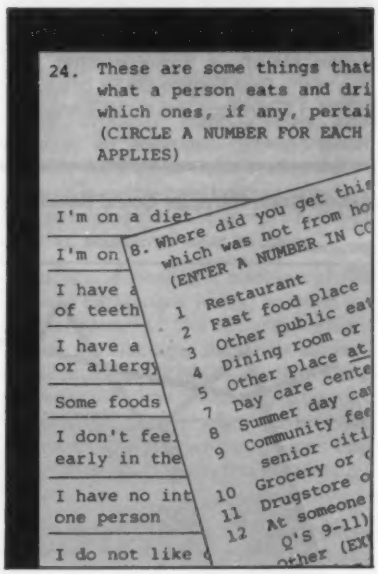
Aseptic packaging could change the way Americans drink. Aseptically packaged juices and milk offer convenience, longer shelf life, and cost savings in transportation, storage, and marketing. For processed fruit and dairy farmers, the payoff may be a better showing in the competition with soft drinks.

Surveying the Nation's Diet *by Laurel Rabin* 16

From meat and potatoes to the rediscovery of malnutrition and the invasion of junk food—the evolution of the American diet over the last 100 years has been recorded by a series of USDA food consumption surveys. One of the surveys helped lead to the original food stamp program, and the latest survey will have an impact of its own.



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American Technology for Soviet Farms?

Stung by the U.S. grain embargo of 1980 imposed after the Russian invasion of Afghanistan, the Soviet Union set out to become more self-sufficient in food.

Two years later, the Soviet "Food Program" was announced. It has become the centerpiece of a dual strategy to improve the quality of the Russian diet and to wean the nation away from heavy dependence on grain imports.

As the midpoint of the decade approaches, success is still an uncertain proposition, but the effort may have an important side-benefit for American agricultural industries. Barring political complications, the Soviet program may bolster agricultural and food technology trade between the United States and the USSR.

That's the view expressed by economist Anton Malish, a Soviet-watcher who heads the East Europe-USSR branch of USDA's Economic Research Service.

"Russian imports of machinery, pesticides and herbicides, the techniques and components for their manufacture, and hybrids and breeding stock should come to the fore during the remainder of the decade," says Malish.

Even before this decade began, the Soviet Union had come to view imported agricultural technology as a key tool in the quest to boost its farm output.

Between 1975 and 1982, Soviet imports of agricultural technology nearly tripled in value, increasing from $970 million to $2.7 billion. Most of the technology came from Eastern Europe, but some was provided by Western nations.

Malish makes another point: "These figures probably don't capture all the agricultural technology imports actually entering the USSR. We're using Soviet numbers which tend to disguise many categories of imports."

Soviet imports of grain and other farm commodities, of course, were much larger, but they simply doubled, from $9.1 billion to $19.3 billion, in the 1975-82 period.

Data from the U.S. Commerce Department suggest that the American share of this trade in technology could be in the range of 10 to 15 percent, with a total value of $200-$300 million in each of the last 2 years. Russian purchases of most U.S. agricultural inputs and technology are relatively modest—except for fertilizer raw materials, mostly superphosphoric acid.

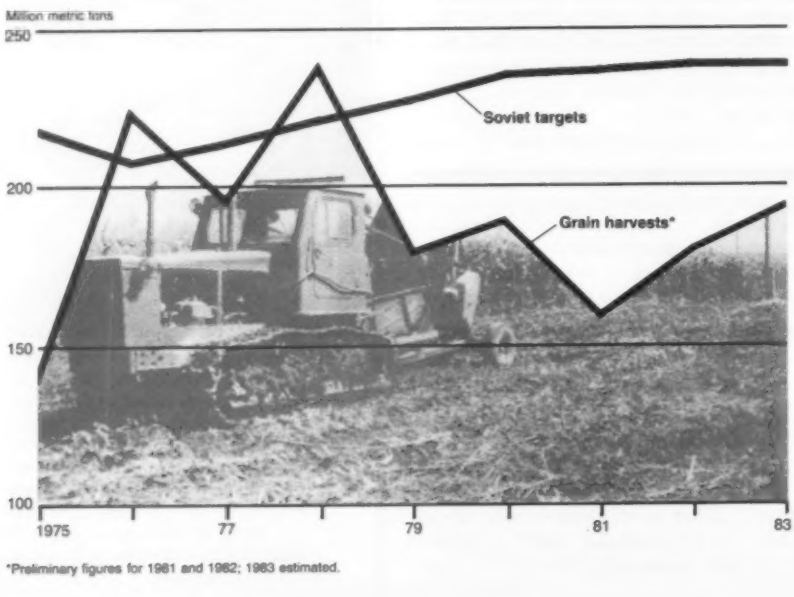
In the last 5 years, the Russians bought more than $750 million worth of U.S. fertilizers, about two-thirds of it in the last 2 years alone. During the same 5-year period, the Soviets also purchased $13 million of farm machinery and parts, $7 million of meat, poultry and other food-processing and foodservice machinery, and $4 million worth of pesticides.

Technology Transfer

Although there are no guarantees that the United States will garner a substantial share of increased Russian imports, Malish does see promising signs that the technology transfer between the two countries will pick up. According to Malish, the Soviets have used a formal accord on cooperation in agriculture with the United States to pinpoint their needs for information on U.S. technology and practices in such areas as genetic engineering, remote sensing, swine hybridization, poultry breeding, and soil mechanics.

Based on Soviet interest shown at the Agribusiness-USA Exhibit held last October in Moscow, they are also eager to learn more about the uses of soybean meal in animal rations, soy protein as a meat extender, and a wide range of technologies in soil conservation, veterinary medicine, mechanized cultivation and harvesting of row crops, plant protectants and growth regulators, and automatic control systems for meat packing plants and dairies, Malish says.

Soviet Grain Harvests Could Benefit From Ag Technology



*Preliminary figures for 1981 and 1982; 1983 estimated.

U.S. machinery on display at the 1983 Agribusiness-USA trade show in Moscow. *Photo courtesy of the U.S.-USSR Trade and Economic Council.*

The USSR Is Importing More Agricultural Technology[1]

	1976	1978	1980	1982
	millions of dollars			
Agricultural machinery, equipment, and tractor spare parts	648	897	1,193	1,234
Mineral fertilizers, and equipment for fertilizer production	10	407	154	317
Pesticides and herbicides	134	177	369	333
Equipment for the food processing industry	309	385	701	726
Other	7	16	91	56
Total	1,108	1,882	2,508	2,666

[1]Based on Soviet figures for agricultural technology imports from all sources. Figures cannot be independently confirmed and probably do not capture all agricultural technology imports.

All this can translate into sales by U.S. firms. Malish cautions, however, that the Soviets are strong believers in self-reliance. They are more likely, for example, to import the technical information or the manufacturing capacity and licenses to produce needed supplies and equipment than to settle for large-scale, long-term imports of Western machinery, equipment, and inputs.

Malish finds ready evidence of the Soviet need for assistance as he documents the record of failed 5-Year Plans, the frustration in using outmoded and unreliable machinery, and the dependence on manual labor that has characterized Soviet agriculture for decades.

"On the production side, mechanization of Soviet agriculture remains a few decades behind U.S. or West European standards. Existing machines are of low technical standards and are poorly utilized. The situation for mineral fertilizers and herbicides is similar."

The low output of Russian agriculture is seen in its "labor-intensive nature," says Malish. He notes that the number of people actively working in agriculture is some 10 times the number in the United States. Agriculture's share of the total labor force, at 16 percent, is greater than that existing in the United States in 1950.

Mechanization and yield-boosting inputs allow American farmers and farmworkers to provide food and fiber for some eight times the number of people supported by each of their counterparts in the USSR.

Comparative Mechanization

"In the United States, agriculture has been, for all practical purposes, fully mechanized for some time. The demand is primarily for replacement tractors, the more efficient, higher horsepower models. Accordingly, the tractor fleet in the United States has been gradually declining," says Malish.

By contrast, he says, the Soviet fleet is still in the growth stage. In 1980, it was about half the size of the U.S. fleet, meaning about the same number of tractors as the United States had in the mid-1940's. "In essence, Soviet machinery is spread over a larger area and has to work harder, with the probable result that it cannot perform planting and harvesting tasks with the timeliness enjoyed in the United States. Yet the shorter Soviet growing season puts a higher premium on meeting optimum seeding and harvesting dates."

Moreover, he says, "one of the most striking differences between U.S. and Soviet agriculture is the lack of trucks and adequate roads in the USSR. Their truck fleet is just 40 percent of ours. This critical truck and road shortage in the USSR isolates communities and imposes an additional transportation task on the tractor fleet. Tractors performing over-the-road tasks accumulate higher engine time using more fuel and causing additional wear and tear."

Tractors and other farm machinery have posed a particularly vexing problem for Russian farmers. "The evidence we have argues convincingly that their agricultural machinery is of low quality, prone to breakdown, and handicapped by constant shortages of spare parts. New machinery is so slowly introduced into production that it is often obsolete by the time it is mass produced."

Malish says estimated scrapping rates for tractors, grain combines, and trucks are in the range of 12-15 percent per year—and are nearly as large as the new deliveries. Thus, while some 734,000 tractors, combines, and trucks were delivered during 1979, the total inventory increased by only 71,000 units as of January 1980. "The Russians have made some improvements since the late 1970's, according to their statistics," he adds, "but scrappage rates are still high."

Soviet agriculture suffers from a shortage of trucks and modern roads to transport farm products. *Photo by Anton Malish.*

Russian cropland also suffers from "deficiencies in mineral fertilizer application, and certain fertilizer production is characterized by low nutrient content, high moisture, and an unusual amount of impurities. Fertilizer is often delivered to farms in concrete-hard lumps and blocks because it sat for weeks in open railroad cars, exposed to the elements."

Yields Pay the Price

As a result of this litany of problems, Malish says, "Russian yields of principal crops are generally within the range of a third to three-quarters of those obtained in the United States. Wheat yields approximate those of the United States in the mid-1950's, although yields of some other crops, such as potatoes, are close to current U.S. levels."

Similarily, livestock production has its share of problems.

"Despite serious efforts to improve efficiency by increasing mixed feed production, by paying greater attention to breeding, and by investing in feed-harvesting equipment, storage, and livestock facilities, the Soviets achieved little or no improvement in feed conversion ratios throughout the 1970's. Their gains in meat production primarily reflect larger numbers of low-productivity animals."

Certainly, nature is not on their side.

"It may be argued that U.S.-USSR comparisons are distorted by the geographic and climatic disadvantage the Soviet Union faces because of its location on the globe," Malish says. "Only one-third of the USSR's farms lie as far south as the U.S.-Canadian border, so the growing season is short when compared to most U.S. agricultural regions. Areas with enough moisture tend to be too cold, while warmer regions don't get enough rainfall. More than two-thirds of the Soviet grain area is located in regions with insufficient precipitation, and severe or very severe droughts can be expected in 1 of every 3 years."

Despite these obstacles, Soviet farmers could still squeeze more productivity out of their land, Malish contends.

He cites a recent examination of Soviet agriculture which concluded that Russian resources produce only about half as much as the same amount of resources in climatically similar areas of North America. In other words, the Soviets could reduce production costs, or alternatively, increase output by recombining existing resources, upgrading the quality of existing inputs, and carrying out agricultural tasks in a more timely and efficient manner.

Reliance on Imported Technology

Whatever objectives the Soviets hoped to realize, they came to rely on imported food and feedstuffs, "probably much more than they originally intended." They have also relied on imported technology to overcome particularly difficult bottlenecks, "something that they are likely to do even more in the last half of the decade," Malish speculates.

Fertilizers, herbicides, and pesticides are considered prime growth items. "The Soviets are major net importers of pesticides. These are often complex compounds, difficult to manufacture, store, and apply, whose chemical basis remains proprietary," says Malish. "A closely related area of possible technology transfer is that of application techniques and equipment for insecticides and herbicides."

Perhaps the most important area for increased Soviet use of technology is in livestock production. Malish says the Russians are interested in efficiencies that can be obtained by altering the animals themselves through specialized breeding (which may include artificial insemination and embryo transplant), through changing the animals' environment, through improved rations optimized for each stage of an animal's development, and through new health and veterinary practices.

Some farm groups are concerned that technology transfers jeopardize their commodity sales. Malish doesn't deny that greater Soviet productivity would affect the trade mix over a period of years, but he also points out that concerns may be overstated.

"In the first place, the Soviets have major farm problems that won't be solved quickly or easily. They already have a longer history of importing American technology than they do of importing American grain. Second, technologies embodied in high protein feeds, seeds, and breeding stock actually represent sales for U.S. farmers," he says.

"Finally, we must recognize that other nations offer similar technologies. Even if the Soviets had to settle for second best, that could still be a major improvement. Think about it. The country that develops a stronger commercial relationship may also get the extra orders for grains or oilseeds."

U.S. exports of agricultural commodities are expected to continue to dominate U.S.-USSR trade, but trade in technology may grow increasingly important, he says.

"The natural fit between the United States as the world leader in agricultural technology, on the one hand, and the USSR's ambitious plans to better supply its citizens with high-quality foodstuffs on the other, suggests that these ties are likely to expand." □

[Based on information provided by economist Anton Malish, chief of the East Europe-USSR branch, International Economics Division, Economic Research Service.]

Farm Machinery Trade Trends

American trade in farm machinery flows both ways, but the traffic slowed in the last few years.

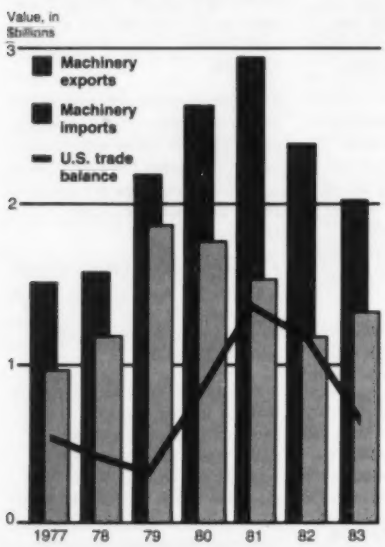
Imports, however, held up better than exports, and the traditional U.S. advantage in farm machinery trade declined to the lowest level since 1979.

To get a better fix on the trade flows, economist Dan Piper of the Economic Research Service collected detailed export and import data on tractors, harvesting equipment, and other machinery and parts. He found that the value of U.S. exports nearly doubled, from $1.5 billion to more than $2.9 billion, between 1977 and 1981.

When exports hit their 1981 peak, imports declined for the second straight year to $1.55 billion. The result: a huge U.S. trade surplus of nearly $1.4 billion in farm machinery and equipment.

Then the surge in sales that appeared so promising turned in the other direction, and exports dropped to around $2.0 billion by 1983. Imports fell for the third straight year in 1982 but partly recovered in 1983. The U.S. trade surplus was trimmed to $667 million.

U.S. Farm Machinery Exports Climb Sharply, Then Slide



Includes assembled units and parts.
Source: U.S. Bureau of the Census.

Why Exports Sagged

Piper attributes the dramatic downturn in U.S. exports to a number of factors. Some are related to debt and currency exchange problems in individual countries, such as Mexico, but most apply broadly.

"The narrowing of the gap between exports and imports since 1981 probably reflects the strong dollar (which raises the foreign exchange cost of goods priced in U.S. dollars), depressed economic conditions abroad, lower foreign production costs, and a continuing trend toward overseas assembly of small and (more recently) medium-sized American tractors," Piper says.

The 1983 decline in U.S. exports was widespread. U.S. sales to Canada slid from a billion dollars in 1982 to $852 million; sales to Australia from $219 million to $98 million; sales to Mexico from $126 million to $46 million; and sales to France from $119 million to $98 million. Exports to most other markets also sagged.

If exports are down from record levels, so are imports. Imports have apparently been squeezed some by the economic conditions on U.S. farms, but American farmers are still buying more foreign tractors than they did in the 1960's or early 1970's.

American in Name Only

Even the traditional American trade names no longer mean "Made in America," Piper notes. U.S. manufacturers are making greater use of overseas subsidiaries and contracts with foreign firms to produce certain types of machinery. With the exception of one major U.S. manufacturer, American-brand tractors of 85 horsepower and under are now assembled elsewhere, frequently with U.S.-made parts, and then brought into the country for sale.

U.S. Sells More Farm Machinery Than It Buys from Most of Its 1983 Trade Partners

	U.S. exports	U.S. imports	Trade balance
	millions of dollars		
Australia	98	3	95
Canada	852	454	398
France	98	41	57
Japan	20	205	-185
Mexico	46	19	27
Saudi Arabia	308	0	308
United Kingdom	66	164	-98
West Germany	76	248	-172
Others	450	213	237
Total	2,014	1,347	667

Figures include value of fully assembled units as well as parts. Source: U.S. Bureau of the Census, Industry Division.

However, many of these tractors, particularly the smallest ones, are not for agricultural uses. They're sold to homeowners, golf courses, shopping centers, schools, and others for mowing lawns, landscaping grounds, clearing snow, and so on.

Bigger tractors and four-wheel-drive machines are still built primarily in the United States, or in Canada. The big tractors have limited markets elsewhere because of the typically small farms in most other nations.

Neighboring Canada, on the other hand, shares many similarities with the United States in farm size and structure. That's one reason why Canada is, by far, the largest market for U.S. farm machinery, as well as one of our largest suppliers. U.S. sales to Canada topped imports by nearly $400 million in 1983.

Other major suppliers to the United States are West Germany, Japan, the United Kingdom, Italy, and France. In both 1982 and 1983, the top six suppliers accounted for 90 percent of American farm machinery imports. The Japanese, especially, have made significant gains in the U.S. market with small, efficient tractors. □

AGRICULTURAL ROUNDUP

Soviets Pump Up a Trade Surplus

While the trade deficit of the United States climbs to a new high, the USSR trade balance has been gradually improving.

"Oil and natural gas sales to the West are helping the Russians to significantly increase their hard currency earnings as they achieve a more positive trade balance," says economist Thomas Bickerton of USDA's Economic Research Service.

In 1983, the Soviet Union reported a $6 billion trade surplus with nonsocialist countries, the highest in recent years. Although this figure reflects only a portion of total Soviet trade, it does denote an improvement in the East-to-West commodity flow. And the new Siberian natural gas pipeline to Western Europe will earn even larger amounts of hard currency for the Soviets.

The USSR is the world's largest producer of petroleum, and the Russians have increased the volume of their oil exports as the price of petroleum declined over the last 4 years.

In 1982, the sale of all Soviet oil and oil product exports was valued at $35 billion. In 1983, these shipments increased. Some of this increase in crude oil exports consisted of Middle East oil that the Soviets re-exported, according to industry analysts. Shipments to the West rose by 15 percent last year.

By drawing on its substantial oil resources and arms sales to the Middle East, the USSR has been able to protect its large gold reserves.

"The Russians would prefer not to have to sell their gold now because the price has gone down in recent years, from about $500 an ounce to about $370 an ounce." In the 1970's, large trade imbalances often forced selloffs of Soviet gold. Sales are estimated to have totaled 1.8 million troy ounces in 1983 in contrast to 5.7 million troy ounces sold in 1982.

"The improved Soviet trade position is attributable not only to larger receipts from energy sales," Bickerton says, "but also to reduced expenditures for agricultural imports made possible by some increase in farm output in the Soviet Union."

Soviet agricultural imports are estimated to have fallen to $18 billion in 1983, after reaching more than $19 billion in 1982 and a record $20.9 billion in 1981—a decline which contributed to slowing the growth in overall Russian imports, Bickerson says.

U.S. agricultural sales to the Soviets in 1983 also are estimated to have dropped off from 1982 levels, dipping from $1.9 billion in 1982 to $1.5 billion in 1983 as a result of cutbacks in Russian purchases of U.S. grain. Grain usually accounts for 80 to 90 percent of the value of U.S. agricultural exports to the USSR.

The USSR Enjoys A Favorable Trade Balance With Non-Socialist Countries

	1980	1981	1982	1983
	billions of dollars			
Exports	35.1	36.0	40.0	41.7
Imports	32.0	36.0	35.3	35.7
Surplus	3.1	0	4.7	6.0

High Risks, Short on Insurance

Farmwork is dangerous. The statistics indicate it can increase your odds of going deaf or getting cancer or heart disease. If you work on a farm, you stand a much greater chance of being injured on the job than workers in most other occupations.

Although the risks are high, farmers, their families, and hired workers are less likely to be covered by health insurance, according to economist Helen Jensen, formerly with USDA's Economic Research Service.

Jensen notes that 90 percent of the American population is covered by some type of health insurance, either privately through group or individual policies or publicly through federal, state, or local programs. For farmers and farm managers, the rate of overall coverage is about 82 percent. For the entire farm population, it's 86 percent.

While the differences may not seem significant at first glance, Jensen says they indicate the difficulties farm people can have in obtaining adequate protection.

She explains that only the largest farms meet the criteria to participate in private group insurance, which generally offers the lowest rates and the widest coverage. In addition, many public insurance plans provided by individual states exempt agricultural workers.

Even farmers who buy individual health insurance coverage may find their policies cost more and cover less than group plans. Why?

"It relates to structure, both in farming and in the insurance industry," Jensen says.

"The average farm business is unincorporated with fewer than five employees and cannot qualify for group programs. Tax laws allow health insurance payments to be considered part of the cost of doing business only if the farm firm is incorporated," she says.

"Private health insurance companies offer the lowest rates and the most comprehensive coverage to employers or other groups with enough participation to distribute costs related to accident and disease among members of the group."

Reduced access to group insurance is the major difference in coverage for farm versus nonfarm individuals, according to Jensen.

She cites a U.S. congressional study: Almost 62 percent of the total population has some form of group coverage. But, for farm people, the figure is only 43 percent. Individual insurance, in general the most costly kind, is more common among farm people (26 percent) than among the total population (7 percent).

In the farm sector, who is more likely to be covered and who is not? Jensen came up with these findings:

- Young farmers, farmers in the South and West, those with low incomes, and those with chronic health problems have less coverage and, when they are covered, fewer benefits than other farmers.
- A particular problem for farm families is the inability to insure unpaid family labor. Less than 80 percent of unpaid family labor is covered.
- Families who depend on farm income for the majority of their total income are least likely to have health insurance. When one spouse works off the farm, the farm family is more likely to have group coverage, usually provided by the off-farm job.

Growth Ahead for Ag Chemicals

Despite the recent ban on EDB and closer scrutiny of other agricultural herbicides and pesticides, USDA analysts foresee continued, though modest, growth in the use of farm chemicals.

In the years ahead, the industry will benefit from both an increase in its sales and its share of overall farm input costs, according to economist Milton Ericksen of the Economic Research Service.

"We expect average, per acre, chemical use to rise," he says. "Agricultural chemicals make up a relatively low percentage of total production expenditures, and chemical prices have risen less than other inputs."

Agricultural chemicals, therefore, "should be in a position to attract a larger share of the input market if they can improve yields or reduce costs by substituting for a more expensive operation." This becomes increasingly true as more farmers shift to conservation tillage to trim energy and labor costs.

The trend toward fewer but larger farms should also boost sales, Ericksen says. "As farm size increases, the expenditures for chemicals, per dollar of crop sales, increase."

Figures from the 1978 Census of Agriculture indicate that the difference in chemical costs among farms can be as much as 5 cents for each dollar of crop sales.

On average, farms with annual sales of $2,500 to $4,999 spent only 1.4 cents on chemicals for each dollar of crop sales, while farms with sales of more than $200,000 spent 5.2 cents per dollar of crop sales.

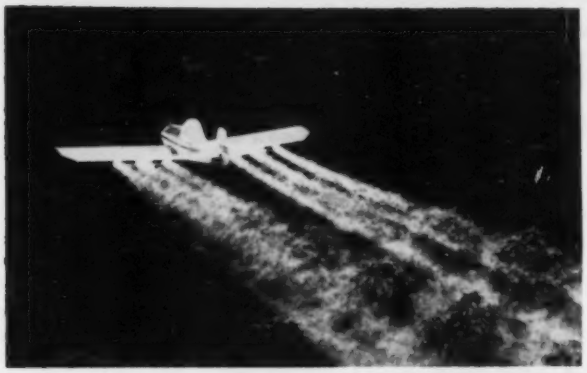
Farms in the $100,000 to $199,999 sales category spent the most for chemicals. Ericksen suggests that greater crop concentration may be the reason why farms in the next-to-the-largest income category had the highest chemical costs. These farms earn more of their cash receipts from crops than other farms.

"Returns from agriculture make up the bulk of total income, so a large farmer cannot risk a serious insect infestation or weed problem," says Ericksen. "Larger farmers also can afford to buy the necessary equipment or hire custom applicators. Their production value is large enough that small differences in yields mean huge differences in earnings."

"The market for agricultural chemicals is going to depend heavily on research and development," he adds. "Scientists on the chemical side are looking for chemical combinations that will help farm managers improve productivity by stimulating plant growth, controlling pests and disease, and reducing harvest and storage losses." On the other hand, scientists on the plant breeding and genetic engineering side are going to look for plants that can develop more quickly than weeds, resist insects and disease, and tolerate herbicide use.

For the chemical companies, of course, "the ideal situation would be an expansion in the acreage of high-chemical-using crops at the expense of low users."

Ericksen notes, however, that his analysis does not indicate any large acreage shifts among crops, or any expansion of total crop acreage beyond what was devoted to crops in the record 1981 year. Crops with the highest chemical expenditures per acre, such as fruits, vegetables, tobacco, peanuts, cotton, and rice, are not those with the large acreages.



"Obviously, the agricultural chemical market is going to depend a great deal on the research and development conducted by private companies and public research agencies," says Ericksen.

Yet, short of any breakthroughs, "current growth patterns in chemical usage should not change significantly through the rest of the decade."

Gleanings

This is the policymaker's dilemma: "While public assistance policies may help the current group of family farms to survive, they may also hinder the long-term survival of family farming as a system. This happens because policies that create an economic environment favorable to family farms may also create a more favorable climate for other types of farm organization. The existence of such policies and programs may induce nontraditional investors and farm organizations to enter the industry or expand their role in farming." *Economist David Harrington.*

To export, we must import says economist Paul Prentice. He notes that if other countries are to have the foreign exchange to buy our products, they have to export to earn that money. So, if our exports are to grow, the United States must be prepared to import from others the items that they produce at a comparatively lower cost. "Economic growth is thwarted if less competitive industries and products are consistently protected, and resources are not allowed to be used in the most productive manner," he says.

. . . but pressures for protectionism are on the rise. When the United States leads a global recovery, Prentice continues, our improved incomes cause imports to rise faster than exports until the recovery catches on in other nations. Thus, the temptation to erect trade barriers to imports and to subsidize exports tends to increase in the early stages of economic recovery.

. . . agriculture itself does not speak with one voice on trade policy, he adds. Grain, soybean, and cotton interests oppose foreign barriers to trade, but they may ask for U.S. loan rates that are above market-clearing levels. Our cattlemen often have sought to tighten quotas on beef imports. Our domestic sugar producers are protected by import restrictions, and our dairy farmers worry about imports of milk products.

Food Marketers Target Consumer Lifestyles

"The most effective way to cope with change is to help create it."

That's a marketing maxim that may partly explain some of the new salt-free, sugar-free, and frozen "gourmet" products shoppers are finding in food stores. It may also be a supporting principle behind the proliferation in choices of where to shop—from the typical supermarket to warehouse, convenience, and superstores.

Both the new food products and the new forms of retailing are helping to define the food industry's future, says economist Larry Hamm of USDA's Economic Research Service. Hamm recently examined how the latest marketing research and sales techniques are affecting the processed fruit and vegetable industry.

He identifies processed food products as just one of several major areas where perceived changes in consumer tastes are being pushed along by marketers.

Items like Stouffer's *Lean Cuisine*, Swanson's *Le Menu*, and Pepperidge Farm's *Vegetables in Pastry* are a few of the products introduced as a result of research into emerging lifestyles and tastes. And with the growing ability of the food industry to dice, slice, and peel the consumer market into any number of targeted segments, there will probably be many more new product lines on store shelves in the near future.

Demographics and Psychographics

Underlying the research which tracks and targets tastes are demographics and its more recent and perhaps more sophisticated offshoot, psychographics.

The demographic characteristics of a population—statistics on such things as age, location, income, education, and family size—are still very helpful to the marketer, of course.

Hamm says the 1980 Census of Population, in fact, pinpointed several demographic trends which have been incorporated into market analyses.

Some of the most often cited changes are: the slowing down of U.S. population growth; the shifting of the population to the Sun Belt: the growing importance of the Hispanic community in the economy; the dramatic increase in the number of women working outside of the home; the general aging trend in the population; and growth in the number of small and nontraditional households.

"Analysts continue to study these demographic trends to understand the implications for food shopping behavior," Hamm says. "For example, there is an increase in the number of men and teenagers who are doing the food shopping and the cooking as a result of women working outside of the home.

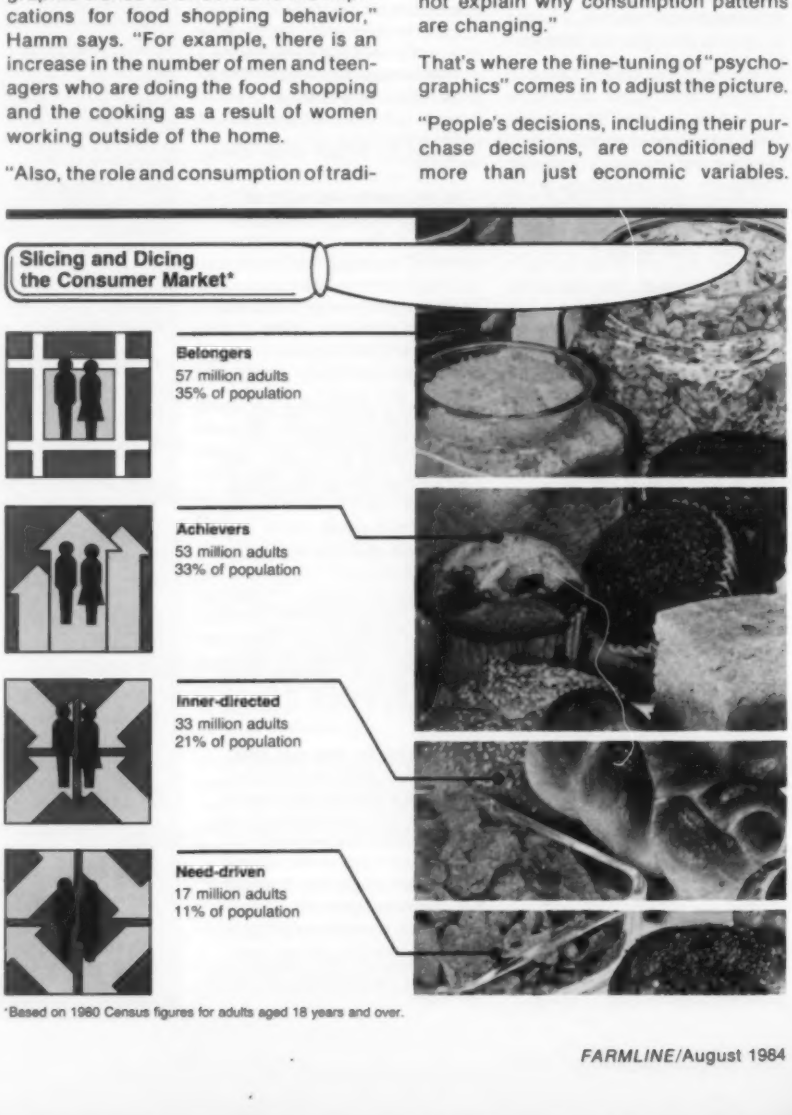
"Also, the role and consumption of traditional meals are declining. Single dish menus such as casseroles are becoming more prominent. And, because of varying work schedules and household activity patterns, the number of meals served separately in many homes has increased to around six a day."

Lifestyles Set Buying Patterns

"While marketers can draw many important conclusions from demographic trends," he says, "the statistics alone do not explain why consumption patterns are changing."

That's where the fine-tuning of "psychographics" comes in to adjust the picture.

"People's decisions, including their purchase decisions, are conditioned by more than just economic variables.



*Based on 1980 Census figures for adults aged 18 years and over.

Sociological, political, theological, and economic factors all interact with personal histories and environments to form value-lifestyle preferences for most consumers," Hamm explains. "These lifestyle preferences affect all decisions."

One recent development in psychographics has been a values and lifestyles classification system developed by SRI International, a California think-tank formerly affiliated with Stanford University.

"This formulation attempts to not only classify consumers as to their common lifestyle characteristics, but also to determine how individuals move between lifestyle categories as they age and mature," Hamm says.

Defining the Market More Sharply

The SRI system defines nine categories of consumers. Hamm says the categories can be generalized into four groups for the purpose of showing the distinct marketing problems and prospects faced by the retailer.

Largest of the groups, made up of about 57 million adults or 35 percent of the population, is the *belongers*, commonly referred to as "Middle America."

"They are the stabilizers of social change and are characterized by people who are traditional, conservative, and conventional," Hamm says. "Their central need is to fit in, not to stand out. They prefer brand names and they avoid experimenting with new foods and cooking methods."

A typical dinner meal of meat, potatoes, and a vegetable is a staple of their diet, he says.

The second largest segment of the market, with about 53 million adults or 33 percent of the population, is the *achievers*. They are typically enterprising, hard-working, and hold values focused not only on the good life but also a better one.

"They are mostly middle-aged, white, and working in successful managerial, professional, technical, or sales occupations. They are competitive, self-confident, and willing to try anything new, especially if it involves a technological breakthrough," Hamm says. "Achievers prefer products and services that are top of the line and convenient. They are the owners of microwave ovens, the ones who shop in the gourmet and specialty stores and spend a significant proportion of their food dollar on meals outside the home."

'Achievers' are willing to try anything new, top of the line, and convenient.

Inner-Directed Group Will Grow

The third major group, *inner-directed*, shares qualities of affluence with achievers but is significantly different in other ways. While only comprising about 33 million adults currently, or 21 percent of the population, the inner-directed numbers are expected to grow rapidly to about 27 percent of the population by 1990.

"Inner-directed consumers are mostly affluent and often come from achiever family backgrounds. They are highly educated and hold technical-professional jobs. These consumers are very socially concerned, and they are often active believers in holistic health and inner growth," Hamm says. "Their food interests tend toward the exotic. Freshness, appearance, flavor, and health and nutrition are all important characteristics in the products they look for."

Obviously, he says, food marketers are concentrating on penetrating and prodding the development of affluent achiever and inner-directed lifestyle groups.

The final category, *need driven*, is composed of money-restricted consumers who have few economic resources and are therefore driven harder by need than by their preferences.

Hamm says this part of the market, which represents about 17 million adults or 11 percent of the population, is characterized by extremely low or poverty-level incomes, greater numbers of minorities, high unemployment levels (especially among the young), and a high proportion of females.

"The need-driven consumer segment is dominated by a sense of alienation, worry, and mistrust of authority, but the older members of this group tend to be strongly traditional. Generally, price is the most important characteristic they look for in food items. They prefer private labels, shop for loss-leader items, use coupons, and often pay for food with food stamps, welfare, or Social Security checks."

Targeting With New Products

One result of all this market research has been the new, convenient frozen foods, which jumped 46 percent in sales last year to a substantial $950 million. Also evident is the growth of light-syrup packed canned fruits—such as Del Monte's "Lite" line—and salt-free canned vegetables.

Moreover, the way these and other products are sold is changing, Hamm says.

"The strategy is to diversify the grocery store," he says, "to make it bigger with more items." He notes that the 100 largest supermarket chains opened more than 2,000 new stores in 1983—most offering over 15,000 items and 85 percent of the stores more than 30,000 square feet in size.

"We're seeing the store expand to appeal to all lifestyle segments," Hamm says.

"It all comes back to how much, or whether, marketers believe in the maxim about coping with change by helping to create it." □

[Based on information provided by economist Larry Hamm of the National Economics Division, Economic Research Service.]

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What Happened to Food Prices?

Shoppers found fairly stable prices at the grocery checkout counter last year, thanks largely to abundant food supplies and a slower rise in food processing and marketing costs.

"In fact, food prices rose only 2.1 percent in 1983, the smallest increase in 16 years," says economist Denis Dunham of USDA's Economic Research Service. Food store prices increased 1.1 percent on average, while prices for food at restaurants and other away-from-home eating places rose 4.4 percent.

In his report, Dunham details how the farm value for many food items actually went down, contributing to last year's modest price rise at the retail level.

"The farm value of foods sold in grocery stores, after going up only 1.2 percent in 1982, fell 2.2 percent in 1983, with much of the decline reflecting lower prices for meat animals and fresh fruit."

On the other hand, he says, farm values rose for poultry, eggs, and food products derived from grains and oilseeds.

"The economic recovery that increased food spending boosted profit margins of the food industry," Dunham notes. "Also, there were reduced labor, energy, and other cost pressures, and small gains in productivity."

Food expenditures, he says, are rising at a slower rate than consumer incomes.

"In 1983, Americans spent about 15.9 percent of total disposable income on food. This share was slightly less than the 16.2 percent of 10 years ago, and was substantially less than the 18.7 percent of 20 years ago," Dunham says.

***Food Cost Review, 1983** by Denis Dunham. (Published June 1984; 49 pages of text, tables, and charts; GPO stock number 001-019-00343-0; $2.25.)*

Targeting for Erosion Control

Rainfall erodes more than 2 billion tons of soil from U.S. cropland each year, possibly jeopardizing the long-term productivity of millions of acres.

As part of the intensified national effort to curb soil losses, two natural resource economists of the Economic Research Service examined the erosion problem to determine the implications of targeting federal conservation programs. Among their findings:

- About 37 percent of U.S. cropland (156 million acres) is nonerosive; soil losses will be less than 5 tons per acre per year regardless of the operator's management practices.
- Eight percent of the cropland (33 million acres) is highly erosive; only permanent sod or low-intensity use will reduce the erosion rate to less than 5 tons per acre per year.
- The remaining 55 percent of U.S. cropland (234 million acres) is considered moderately erosive; the erosion rate has the potential of being either above or below the 5-tons-per-acre "tolerance," depending on whether the farmer follows such management practices as crop rotation, contour plowing, minimum tillage, and terracing.

Within the last category, 63 million acres are eroding at a rate above 5 tons per acre per year, according to the analysts.

Federal conservation programs could be targeted with the moderately erosive land in mind, say the authors. Their study provided little support for the idea that federal programs should be tailored to specific types of farmland owners, based on education, income, age, or farm size. They found no significant relationship between such characteristics and soil losses.

***Assessing Erosion on U.S. Cropland** by Nelson Bills and Ralph Heimlich. (Published July 1984; 19 pages of text and data tables; GPO stock number 001-019-00341-3; $1.50.)*

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Changing the Way Americans Drink

Aseptic packaging could change the way Americans drink.

Products that are aseptically packaged—right now, mostly juices and milk—have some advantages over their more conventional canned, cartoned, and bottled counterparts, according to USDA economist Naaman Seigle of the Economic Research Service.

Convenience is a major attraction, especially for consumers. No refrigeration is needed for milk and other perishables. For fruit juices, the packaging is less expensive and occupies less space on grocery shelves than cans or bottles. In both cases, processors and retailers stand to save on transportation, storage, and marketing costs.

Depending on the manufacturer, aseptic containers are made up of five to seven layers of aluminum foil lining, polyethylene, and paperboard. The containers and the beverages are separately sterilized. Then the beverage is hermetically sealed in the box under sterile conditions to prevent bacterial growth and spoilage. The result: a product that will stay fresh in the cupboard for about 6 months, as long as the package remains sealed.

Exactly what do aseptically packaged products look like? "You've probably already seen them on grocery shelves," Seigle says. "They look like rectangular boxes, which is exactly what they are." The most commonly used box for the individual-serving size is about 4 inches tall. The larger 1-liter size has the shape of a building brick. Although paper-based boxes are used for most aseptic packaging, some puddings, yogurts, custards, soups, and sauces are now being produced in aseptic cans.

Aseptic packaging was first developed in the 1930's and has been popular in Europe and the Far East for many years. An estimated 70 percent of the milk sold in West Germany and one-third of all the beverages sold in the United Kingdom are aseptically packaged. The process is now available in about 80 countries, including the United States.

Its entry into the American market lagged behind most other industrialized countries because of U.S. food safety regulations. The use of hydrogen peroxide as a package sterilant required Food and Drug Administration (FDA) approval, which came in 1981.

Then aseptic packaging and the accompanying ultra-high temperature (UHT) processing hit the American marketplace. The first products released were fruit-flavored drinks and reconstituted fruit juices; next came whole, skim, and flavored milks; and now, iced teas, frosted milk shakes, yogurts, and puddings. Other dairy products are sure to follow, Seigle says.

The Cost Factor

What does the U.S. food industry find so appealing about aseptic packaging? Seigle points to cost. Refrigerated trucks, warehouses, and store shelves are unnecessary. In addition, the lighter weight of aseptic packages results in reduced freight costs; the collapsible paper-based packaging is cheaper to inventory and store than empty bottles or cans; and the cube shape results in better use of supermarket shelf space.

According to James E. Tillotson, a vice president with Ocean Spray Cranberries, Inc., a major distributor of aseptic fruit juice drinks, processors and retailers benefit because of:

- lower package weights—up to 21 percent less for 1-liter containers, compared with similar 32-oz. glass bottles.
- increased shipping capacity—up to 50 percent more for 1-liter containers in 40,000-pound truckloads.
- 36 percent more units per linear foot of shelf space for aseptic liters versus glass quarts.

Maybe most important, however, is the actual cost of the container itself, according to Seigle. Early on, industry analysts found that the aseptic containers could save up to 5 cents per container.

Metal and glass containers are energy-intensive and, therefore, expensive to manufacture. This can add a considerable amount to the retail price of a product, sometimes as much as 25 to 35 percent, according to an earlier Economic Research Service study. Tillotson maintains that increasing energy prices will probably boost the manufacturing costs of cans and bottles by at least 10 percent per year through the 1980's.

"Of all the benefits the aseptic system can offer juice processors, the container's lower cost is probably the single greatest incentive to invest in the new technology," Seigle says.

And investments have been considerable.

Investments Bring New Markets

Several large companies—Coca-Cola, Del Monte, and Ocean Spray—and a number of smaller ones have installed aseptic processing and packaging facilities for some of their product lines. Other industry giants—such as General Foods and General Mills—have acquired one or two machines in order to get experience or to test market some products, Seigle says.

Ocean Spray estimates its overall investment will total at least $30 million, spent

over 5 years, for facilities, equipment, advertising, and related costs.

Dairymen, Inc., a regional milk marketing cooperative that serves 17 eastern and southeastern states, made an initial investment of $16 million for equipment and facilities in 1981. A smaller milk cooperative on the West Coast, Valley Fresh Products of Sumner, Wash., recently invested $1 million in two aseptic packaging systems.

But will consumers buy aseptic products?

For the fruit juice market, the answer already seems clear. "Most analysts agree that the individual fruit juice drinks are a tremendous success," Seigle says.

Ocean Spray's Tillotson says the convenience factor has a lot to do with it. "Consumers can grab a lightweight box to take with them anywhere and not have to worry about refrigeration or spoilage. If they want their iced tea or chocolate milk shake cold, they can put it into the refrigerator for an hour or two."

He stresses how this kind of convenience has opened up a whole new market—leisure and recreation—for juice drinks. In other words, the new boxed juice drinks are not competing only with existing juice markets for their sales. They've broken into a market long dominated by soft drinks.

For skeptics who contend that the public will try any new product at least once, Tillotson cites the results of Ocean Spray's recent consumer tests. He reports that 90 percent of all repeat buyers had purchased Ocean Spray's individually-wrapped aseptic juice products at least three times. The major reason: Overwhelmingly, consumers said it was the convenience of the package, although they also cited the comparative quality of the juice relative to the alternatives.

UHT Milk: Another Kind of Success

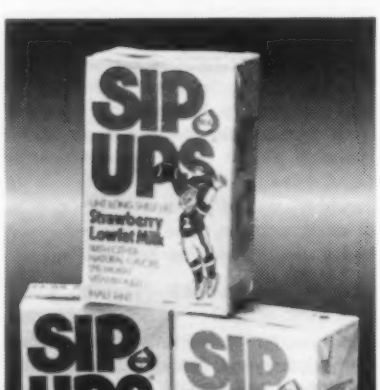
For milk, the success has not been so immediate and overwhelming. However, sales are just about what the dairy industry expected, according to Alan Johnson, a spokesman for Dairymen, Inc.

The "milk in place of a soft drink" marketing strategy has worked well in several other countries.

"In America, we are too accustomed to our traditional pasteurized milk and have no real desire or need to change," Johnson says.

And cost is another issue for milk. Aseptic containers cost more than the plastic jugs or paperboard cartons in which regularly pasteurized milk is packaged.

As for flavor, the UHT (which stands for ultra-high temperature, the aseptic processing technique) process does not produce an exact duplicate of the pasteurization process. "It's a close, but not perfect, substitute," says USDA dairy expert Jim Miller, in referring to the taste of UHT milk. Miller says the major taste difference is a "slightly cooked flavor."



But Johnson at Dairymen disagrees. He says that, in independent taste tests, 80 percent of the consumers who tried UHT and pasteurized milk could not tell the difference.

Dairymen, Inc., distributes *Farm Best*, UHT-processed whole and low-fat milk in large and single-serving containers; and *Sip Ups*, a line of low-fat flavored milks sold only in individual-serving containers. "The markets for these two products are very different," Johnson says.

"*Farm Best* is geared to the convenience market. Housewives can store a box in their cupboards so they never have to worry about running out of milk. Campers can take a supply with them and not have to worry about refrigeration."

Sip Ups are geared more toward recreation and leisure and as an alternative to soft drinks, especially for children. Seigle says that the "milk in place of a soft drink" marketing strategy has worked well in several other countries, including Canada. "This kind of success in the United States may be a few years off," Johnson says, "but we feel we are going in this direction."

The milk marketing cooperative is diversifying. "The plant is not yet running at full capacity," Johnson says. "We are operating one shift, 5 days a week, so we have room to expand." Future expansion is planned for a line of fruit juice drinks and additional dairy products.

What will continued aseptic processing and packaging mean to farmers?

"Anytime new markets for farm products can be opened up," Seigle says, "it's a boon for farmers." Even the slightest shifts in consumption are important for some commodities. He adds, "After all, there's only so much space to compete for in a consumer's stomach." □

[Based largely on material provided by agricultural economist Naaman Seigle of the National Economics Division, Economic Research Service.]

Retort Pouches: Similar Advantages, But a Slow Start

The retort pouch—another example of a new food packaging technology—has been on the U.S. market for about 4 years, yet few consumers are familiar with it. Is it a failure, or has it just gotten off to a slow start?

Economist Naaman Seigle says that retort technology hasn't made much of an impact because most processors have simply not yet adopted it. The primary reasons include the expense and slower speed of the retort packaging equipment and the higher costs of the current materials that make up the retort package. In addition, some processors may also be concerned about consumer acceptance.

The retort pouch is an opaque, three-layer bag made of polyester, aluminum foil, and polypropylene (a plastic). After the food is sealed inside, the pouch is inserted into a slim cardboard box.

The benefits of the retort process are similar to those of aseptic packaging. Because the contents are sterilized, foods can be stored at room temperature for up to a year and a half. The boxes take up less space than conventional cans in shipment, display, and home storage. And, when compared with frozen food, retorts save energy in both storage and shipment.

From the consumer's point of view, the pouch offers convenience in preparation as well. Some items, such as potato salad, can be served right out of the pouch at room temperature or chilled in the refrigerator just before use. When heating is required, the pouch can be dropped into boiling water. Heating time is only 5 minutes compared with up to 30 or 40 minutes for a similar frozen food.

Consumer Response

What do consumers think of food from a pouch? Seigle says a recent consumer taste test conducted by two industry groups found retort pouches preferred to canned items but not favored over frozen foods.

Researchers at Cornell University say retort pouched foods recently fared well in tests for taste, vitamin retention, and appearance. When comparing seafood and vegetable dishes packaged in cans and retort pouches, researchers found:

- Retort processed seafood had a firmer texture and lighter color than the canned variety.
- The retort packaged foods retained greater amounts of vitamin B_1 than the canned.
- In taste tests, consumers preferred the retort packaged foods to canned.

Consumer experience has been similar in research conducted for Kraft, Inc., the major producer of retort pouched foods. Taste tests and marketings of the retort line have been very positive, according to Kraft spokesman Jack Beatly. He's referring to Kraft's *a la Carte* dinners which have been sold regionally since 1979, with national distribution scheduled for the mid-1980's. "The pouches have made quite a hit with campers," Beatly says.

However, one consumer drawback is cost. In the retail market, retort processed foods cost more—an average 20 to 40 percent more—than their canned and frozen counterparts. This reflects the higher packaging and machinery costs, Seigle says.

Industry Costs and Benefits

Wholesale cost information is sketchy because manufacturers are reluctant to disclose such data to competitors, Seigle says. According to one manufacturer, a standard 8-ounce pouch with paperboard box cost about 17 cents in 1980, excluding contents. This compares with 8.6 cents for a standard 8-ounce can and label.

Of course, this does not account for some potential savings in energy costs during processing. Although the food is processed at higher temperatures during retort processing (250°-300°F compared with 121°-250°F for other methods), it takes only about one-third the time.

Another area where cost seems to be an issue is getting the food into the pouch. The machinery now used for filling retort packages is slower and more expensive: It costs three times as much as machinery used in more conventional packaging and handles only 30 to 60 pouches per minute compared with the usual 120 to 400 containers.

A higher speed machine that has a capacity of filling 250 pouches per minute has recently been developed by researchers at the U.S. Natik Army Research Laboratory. Although still in the prototype stage, this equipment may be the answer to launching retort packaging into industry, if the equipment can be manufactured to sell at a competitive price.

The military has a big stake in the success of retort technology because it has conducted the most extensive, long-term research, dating from the early 1950's. The U.S. Army will probably be the major user of pouched products, at least initially, Seigle says. The plan is to replace C-rations (canned and reconstituted foods eaten by troops in the field) with pouched foods.

In the long run, the commercial success of retort technology will depend on processors adopting it and consumers accepting it.

Surveying the Nation's Diet

You are what you eat, goes the old saying. But who you are, to some extent, determines what you eat.

If you're a wealthier American, you buy more melons and strawberries than lower income people. If you live in the Northeast, you buy more fruits, vegetables, and potatoes than people living in the South, the West, and the Midwest. If you have a teenager in the family, you buy more potato chips and soft drinks than households with older or younger members.

The historical setting also makes a difference to diets. As Jane Porter, an agricultural historian with the Economic Research Service, explains, "At the turn of the century, meat and potatoes were the rule for those who could afford the meat. Salads were virtually unknown. With the discovery of vitamins and the emphasis on nutrition in the World War I era, salads came into their own. Then, in the Great Depression, people wanted inexpensive calories to fill empty stomachs, and they went back to fats and carbohydrates.

"Along came World War II, and everyone was talking about balanced diets and how meals should be planned with selections from each of four groups—dairy, fruits and vegetables, starches, and meats. In the 1950's, food seemed plentiful, and nutritionists were concerned that Americans were overweight rather than undernourished.

"Finally, in the mid-1960's, the problems of poor diets resurfaced," says Porter. "Attention shifted to the pockets of poverty and malnutrition, and to the dietary consequences of all the junk food consumed by both the rich and the poor."

These food facts, present-day and past, are part of the national record because of a series of USDA food consumption surveys over the last 100 years. The latest major effort—one of only six nationwide USDA consumption surveys—was conducted in 1977-78.

As the results are compiled, cross-tabulated, and interpreted, they too are becoming an important part of the nation's self-awareness and might even have a role in the policymaking process. Researchers are still sifting through mounds of data based on about 38,000 individual interviews covering thousands of different foods, as well as consumption habits, incomes, ages, and other relevant information.

From meat and potatoes to junk foods... without food surveys, we'd only be guessing.

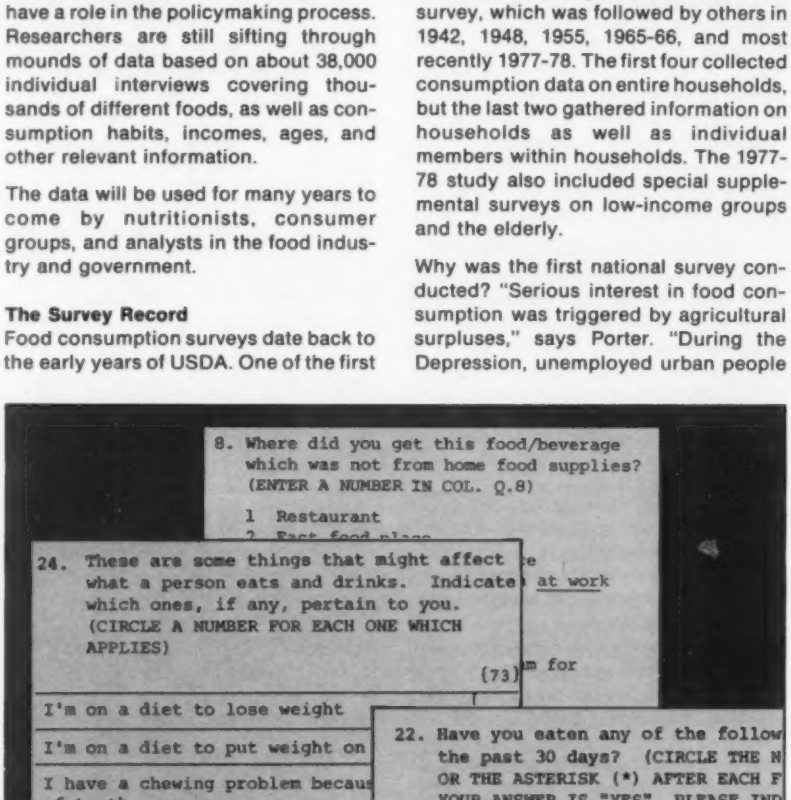
The data will be used for many years to come by nutritionists, consumer groups, and analysts in the food industry and government.

The Survey Record

Food consumption surveys date back to the early years of USDA. One of the first was conducted in 1886. These studies focused on small samples in individual cities. In 1898, for example, USDA published the results of dietary studies in Chicago and New York City. The Chicago study was based on a sample of 53 families, and the New York study on 21 families.

USDA consumption studies on a national scale began with the 1935-36 survey, which was followed by others in 1942, 1948, 1955, 1965-66, and most recently 1977-78. The first four collected consumption data on entire households, but the last two gathered information on households as well as individual members within households. The 1977-78 study also included special supplemental surveys on low-income groups and the elderly.

Why was the first national survey conducted? "Serious interest in food consumption was triggered by agricultural surpluses," says Porter. "During the Depression, unemployed urban people


8. Where did you get this food/beverage which was not from home food supplies? (ENTER A NUMBER IN COL. Q.8)

1 Restaurant

24. These are some things that might affect what a person eats and drinks. Indicate which ones, if any, pertain to you. (CIRCLE A NUMBER FOR EACH ONE WHICH APPLIES) (73)

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I'm on a diet to put weight on

I have a chewing problem becau of teeth

I have a medical problem like or allergy

Some foods do not agree with m

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I have no interest in cooking one person

22. Have you eaten any of the follow the past 30 days? (CIRCLE THE N OR THE ASTERISK (*) AFTER EACH F YOUR ANSWER IS "YES", PLEASE IND HOW MANY TIMES IN THE PAST 30 DA HAVE EATEN THAT KIND OF FOOD)

	(54) Yes	No
Liver: Beef or calf's	1	*
Liver: Chicken	2	*
Liver: Pork	3	*

were going hungry, while farmers couldn't find buyers for their products. The Agricultural Adjustment Act of 1933 was aimed at balancing food production and consumption, so accurate information was of the greatest importance."

In his second inaugural address in January 1937, President Roosevelt issued one of his most noted statements: "I see one-third of a nation ill-housed, ill-clad, and ill-nourished."

Evidence was provided, in part, by the 1935-36 food consumption survey. One of the programs coming out of the survey was the first food stamp plan for low-income people. It was intended to help farmers sell their products, grocers to increase their business, poor people to improve their diets, and the nation to solve an economic problem and improve health standards.

Surveys are descriptive; they provide the basis for the prescriptive.

Step One Is Identifying Problems

"The consumption surveys are descriptive. They provide the basis for the prescriptive," says Robert Rizek, director of USDA's Consumer Nutrition Division.

Survey data on nutrient consumption, for example, can be matched against recommended dietary allowances (RDAs) of the National Academy of Sciences. That makes it possible to identify dietary deficiencies among large or special groups of people. Then efforts can be made to improve diets through education or food policies.

Results now available from the 1977-78 survey indicate that many women don't consume as much iron as they need. Calcium intake also appears to be a problem as people have been drinking more soft drinks and less milk.

Other uses may be less obvious. Case in point: FDA can use survey findings to determine the levels of food additives that are being consumed by different income or age groups in different regions. If the diets of some groups are especially heavy in certain food products, the intake of specific additives may exceed recommended norms for these groups, even though the majority of consumers may be well within FDA standards.

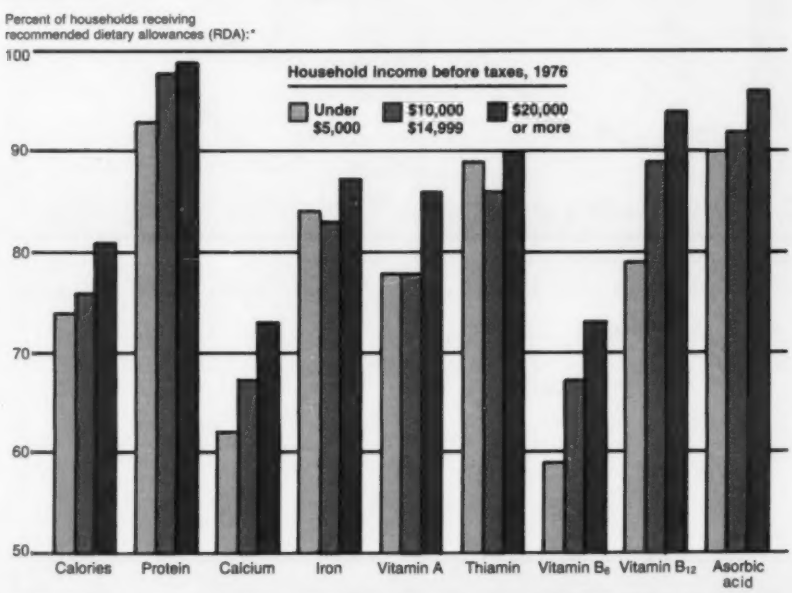
Similarly, EPA can look at consumption patterns to determine the levels of pesticides in the diet. A poor adult in the South, for instance, might consume a great deal of kale since it is a relatively inexpensive crop there. The questions would then be how much pesticide residue is left on kale and are some people receiving a potentially toxic amount.

Data on consumption patterns and trends in different parts of the country and among different groups are also important to farmers and the food industry.

"Generally, it's up to policymakers, educators, and the people who make production and marketing decisions in the private economy to determine how survey results are applied," says James Blaylock, an ERS economist who analyzes survey data. His colleague, economist David Smallwood, adds, "One thing we can be sure of is that the findings of the 1977-78 survey will be examined from every angle and mined for every nugget of useful information over the next 10 years." □

[Based largely on information provided by historian Jane Porter and economists David Smallwood and James Blaylock of the National Economics Division, Economic Research Service.]

Survey Results Show that Less Than 80% of Households Received Recommended Levels of Some Nutrients, Although Higher Income Households Held the Lead

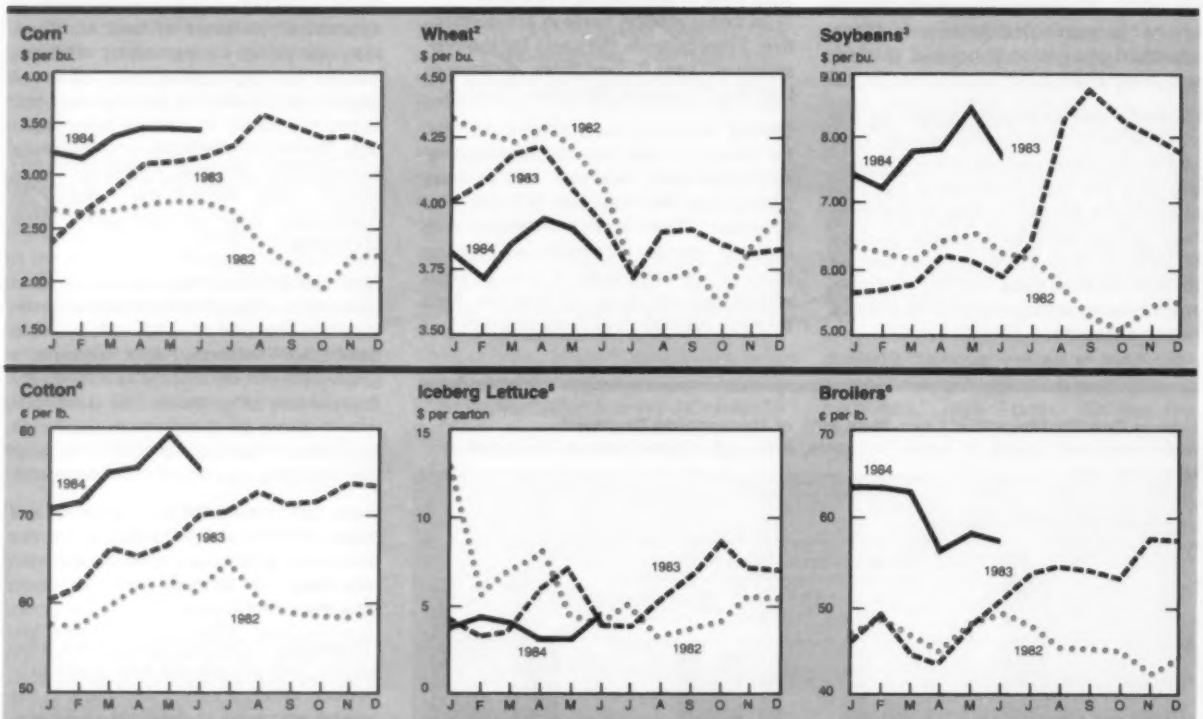


*Based on food use and income reported in the 1977-78 USDA Nationwide Food Consumption Survey for Spring 1977.

FARMLINE TRENDS

Monthly Price Monitor

USDA's June index of farm prices declined seven-tenths of 1% but was 7.5% above the year-earlier level. Most wholesale market prices shown below were down from May's prices. Exceptions were lettuce and barrows and gilts. Lettuce increased $1.50 a carton to $4.53, the highest price this year. Barrows and gilts rose to $50.95, the highest since March 1983. Corn prices held fairly steady, while wheat dropped a dime a bushel, cotton lost 4¢ a pound, and soybeans slid to $7.70 a bushel, down from May's $8.43. Choice steers sank below $65 per cwt for the first time this year.



[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16" spot market price. [5]Standard carton 24's, California-Arizona. [6]Wholesale, New York. Monthly average prices since May 1983 may not be strictly comparable with prices for previous months. [7]Omaha.

Leading States in U.S. Agricultural Exports*

Fiscal 1983

	1st	2nd	3rd	4th	5th	6th	7th	8th
	millions of dollars							
All products (U.S. total: $34.8 billion)	Illinois 2,945	Iowa 2,847	California 2,471	Kansas 1,820	Minnesota 1,820	Nebraska 1,755	Texas 1,631	Indiana 1,507
Soybeans and products (U.S. total: $7.8 billion)	Illinois 1,254	Iowa 1,095	Missouri 629	Indiana 626	Minnesota 596	Ohio 471	Arkansas 373	Mississippi 320
Feed grains and products (U.S. total: $7.3 billion)	Illinois 1,416	Iowa 1,391	Nebraska 911	Indiana 687	Minnesota 604	Ohio 406	Kansas 356	Michigan 273
Wheat and products (U.S. total: $6.2 billion)	Kansas 1,092	North Dakota 713	Oklahoma 539	Washington 465	Montana 415	Texas 327	Idaho 299	Minnesota 277
Cotton and linters (U.S. total: $1.7 billion)	California 432	Texas 386	Mississippi 249	Arizona 174	Louisiana 123	Arkansas 75	Alabama 65	Tennessee 49
Unmanufactured tobacco (U.S. total: $1.5 billion)	North Carolina 733	Kentucky 239	South Carolina 135	Georgia 114	Virginia 110	Tennessee 81	Maryland 32	Florida 22
Fruits and preparations (U.S. total: $1.4 billion)	California 690	Florida 277	Washington 119	Texas 54	Arizona 44	Michigan 29	Hawaii 28	Oregon 24
Live animals and meat, excluding poultry (U.S. total: $1.2 billion)	Iowa 111	Texas 104	Nebraska 74	Kentucky 64	Kansas 59	California 56	Illinois 48	Oklahoma 47
Vegetables and preparations (U.S. total: $989 million)	California 200	Washington 140	Idaho 111	Michigan 108	North Dakota 70	Nebraska 57	Colorado 55	Florida 43
Rice (U.S. total: $874 million)	Arkansas 323	California 208	Louisiana 141	Texas 126	Mississippi 56	Missouri 20	—	—
Poultry and products (U.S. total: $451 million)	Arkansas 50	Georgia 49	North Carolina 37	Alabama 36	California 33	Indiana 23	Texas 22	Mississippi 21
Dairy products (U.S. total: $348 million)	Wisconsin 73	California 71	Minnesota 57	Michigan 23	Iowa 23	New York 22	Pennsylvania 19	Ohio 12

*State origins are not monitored as products move into export channels. The above statistics on export shares are based on state contributions to U.S. production or marketings, adjusted where possible to reflect stock levels and livestock feeding within states, and other available information. Some product categories are not shown. Chart data were provided by economist Steve Mimmo of the International Economics Division, Economic Research Service.

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